

# INTERNATIONAL MONEY

Theory, Evidence and Institutions

Paul Hallwood and Ronald MacDonald

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## *Theory, Evidence and Institutions*

Paul Hallwood and Ronald MacDonald  
*with contributions from Robert Shaw*

Basil Blackwell

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# 1 Introduction

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The field of international monetary economics has become an especially dynamic discipline during the last fifteen years or so as major institutional changes and theoretical developments have followed upon one another. At the institutional level, gold has been demonetized and the major industrial countries have abandoned the adjustable peg exchange rate system; whilst at the theoretical level attention has switched away from the theory of the balance of payments to finding a robust theory of exchange rate determination. This is hardly surprising as the causes and consequences of exchange rate movements are of concern to many groups – governments, bankers and private asset holders besides international economists.

David Hume and Gustav Cassel did provide widely held theories of the balance of payments and the exchange rate but their theories with their modern developments have been found to be deficient in certain respects. Cassel's theory of purchasing power parity (ppp) simply does not seem to explain the actual behaviour of exchange rates since they were floated in the early 1970s; and Hume's theories, which culminated in the monetary approach to the balance of payments, are deficient when adapted to explain the determination of exchange rates. The main problem with the ppp is that it is exclusively a current account explanation of the exchange rate which does not seem to explain exchange rate movements very well. On the other hand, the monetary views of the exchange rate tend to concentrate overmuch on the capital account and to ignore both the large menu of assets which are now internationally transferable and the feed-back effects of current account imbalances on asset holders' wealth.

In chapters 4–8 these points, mentioned only in the barest outline here, are developed at a level suitable to senior undergraduate and postgraduate students. They are preceded by a short chapter on balance of payments theory developed between *circa* 1930 and 1960 as well as referring to Hume's eighteenth-century original version of



## 2 Introduction

the monetary approach to the balance of payments. Chapter 4 looks at purchasing power parity and its deficiencies and subsequent chapters explain the modern monetary, asset and portfolio approaches to the exchange rate. Chapter 8 assesses the econometric evidence on the efficiency of currency markets. The final section of this Introduction provides a perspective preview of these chapters on international monetary theory.

Institutional developments precipitated much of this theoretical frenzy for until 1971 and again briefly during part of 1972–3 the major industrial countries pegged their exchange rates to gold and so created the so-called parity grid exchange rate system. The institutional setting for this was the international conference held in the Mount Washington Hotel at Bretton Woods, New Hampshire, in 1944. Following the unhappy experience with floating exchange rates during the 1930s gold was resurrected as the commodity base of the international monetary system. A good deal of the 1960s was spent by leading economists and the IMF trying to find a substitute for gold. It was eventually agreed to create the Special Drawing Right (SDR) account in 1967 as an IMF operated ‘paper gold’ replacement. So far, though, the SDR has not even approached the level of importance which had been planned for it and international liquidity is still largely augmented, as it was in the 1960s, through US balance of payments deficits. But, in briefest outline, what are the main events during the last decade and a half of international monetary history?

### **‘Shocks’ and Instability**

The period 1970–3 is most interesting as it marks the breakdown of the Bretton Woods international monetary system: i.e. the demonetization of gold and move to floating exchange rates. By 1970 the US was virtually freed from the obligation to supply gold to either the private market or to central banks at \$35 per oz and pursued a policy of benign neglect towards its balance of payments. In fact in 1970 the US ran a balance of payments deficit of \$10 billion compared to a surplus of almost \$3 billion in 1969. The deficit was wholly due to a large capital outflow from the US to European countries and this outflow persisted through to 1973. The net outflow of dollars through the balance of payments increased the monetary base in the rest of the world (ROW) since, for example, European countries were forced to monetize their capital inflows in an attempt to prevent their currencies from rising. The increases in the ROW’s money supply for the period 1970–3 suggests that they

were unsuccessful in sterilizing the effects of the reserve inflows on their monetary base. For example, the ROW's money supply increased by 21 per cent per year between 1970 and 1972, having averaged about ten per cent in the years preceding 1970. By the third quarter of 1971 the exchange rate realignments that took place with the dissolution of the Bretton Woods system led to a US balance of payments surplus and a reduction in the ROW's monetary growth by the end of 1973 to 5.4 per cent. By 1973 and 1974 the effects of the expansion of the world money supply was to raise the ROW's inflation rate to eight per cent and 12 per cent respectively.

The crucial question about the 1970-73 world monetary expansion is: what was its source? On the face of it one would be tempted to infer that it was excess growth of the US money supply spilling through the balance of payments into the rest of the world as in the monetary approach to the balance of payments discussed in chapter 5. It has been argued that excessive monetary growth in the US was a consequence of attempts to finance the Vietnam War via monetized budget deficits. However, a closer look at the figures reveals that during this period, the US money supply increased at a lower rate than the ROW's. How then do we reconcile the low US money supply growth with the rapid growth in international liquidity during the period?

Heller (1976) has argued that during the 1960s the perceived strength of the US dollar induced non-US private entities, particularly commercial bankers, to accumulate large dollar balances. But by the late-1960s such investors, worried by the accelerating inflation in the US and a belief that the dollar was overvalued, began to switch from dollars to other currencies. For example, during the period end-1969 to end-1971 liquid US liabilities to private foreigners fell from \$28 billion to \$15 billion and furthermore deposits at US banks owned by foreign commercial banks fell from \$19 billion to \$7.3 billion. There is, moreover, some evidence to suggest that there was a decreased demand for dollars in the US (i.e. by individuals and corporations in anticipation of the devaluations which occurred in 1971 and 1973). Hence the net capital outflow from the US during 1970 to 1973 resulted not from excessive US monetary growth but rather from a substitution of other currencies for dollars.

The outflow of dollars, the collapse of the international monetary system and accelerating world inflation led many countries to adopt floating exchange rates. This was partly because international capital flows had become so enormous as to overwhelm a nation's foreign exchange reserves and partly, proponents of floating exchange rates argued, so that countries could insulate their own domestic monetary

conditions from external monetary shocks. It has been pointed out that the dispersion of national inflation rates amongst the seven leading industrial countries was higher in the fourteen or so years after 1971 than it had been in the previous decade of pegged exchange rates. Yet this difference was not great and there is a striking fact: the correlation of real GDP rates of growth amongst industrial countries which had been low in the 1960s became high in the 1970s (de Grauwe, 1983). Why was this?

The answer seems to lie with the impact of three major shocks to the international economic and financial system during the 1970s which affected all countries at the same time. Chronologically, the first was the flood of dollars into foreign exchange reserves, referred to above, which set off monetary expansion and stimulated economic activity around the world. The 1971-3 world economic boom was unusual both for the large number of countries which participated in it and for the speed of its acceleration from cyclical trough to following peak (Cooper and Lawrence, 1975). The second shock was the fourfold rise in oil prices in 1973 which added to world inflation and sent the industrial oil importing countries and the non-oil less developed countries (ldcs) into balance of payments deficit. The oil shock was repeated in 1979-80. On the first occasion the industrial countries attempted to prevent deflation of real economic activity by running larger fiscal deficits and the non-oil less developed countries stepped up the rate of their international borrowing. While, after 1979-80, many of the industrial countries responded with a policy of monetary tightness in an effort to curtail inflation and the less developed oil importers soon ran into a debt crisis which provoked the adoption of severely deflationary policies.

What then of the case for flexible exchange rates which had been so strongly argued in many quarters in the 1960s? (See, e.g. Friedman, 1953 and Johnson, 1970).

The case for flexible exchange rates was usually made with reference to the supposed independence that that regime gave to domestic economic management, particularly control over the money supply. With a flexible exchange rate the objectives of full employment, economic growth and price stability could be pursued without the authorities being constrained by the balance of payments consequences of their actions. The exchange rate would take the strain. Indeed, it has been argued that the pegged but adjustable exchange rate system (supplemented by conditional liquidity managed by the IMF) created at Bretton Woods itself increased the scope for domestic economic management in comparison with the fixed exchange rate

gold standard system of 1870–1914 (Cooper, 1982). But do the facts bear out the argument that progression to floating exchange rates would improve economic and financial stability in each of the member countries of the international financial system?

The evidence for the UK, the US and Germany – shown in table 1.1 – is by no means supportive of this proposition, in fact the opposite is often true. It is not being argued here, though, that floating exchange rates were themselves responsible for the increased instability. It is more likely that the causality was the other way around. Thus, exchange rate instability has not necessarily been excessive if it has been caused by volatility in the fundamentals which drive exchange rates – the money supply and real income, for example. These issues are discussed at length in chapters 6 and 7 on, respectively, the monetary and portfolio approaches to the exchange rate and in chapter 8 on the efficiency of foreign exchange markets. It is, however, difficult if not impossible to know for sure what the effect of floating exchange rates has been as a rerun of the 1970s and 1980s with fixed exchange rates is not possible!

The international financial system of the 1950s and 1960s still had gold as its nominal commodity base and, as in the period of the nineteenth century gold standard, inflation rates were contained below a relatively low ceiling. In all three cases shown in table 1.1 inflation was much higher in the 1972–84 period than it had been before the change over to managed floating. From a monetarist perspective the reason for this is clear: money growth was also sharply higher in the UK and the US (not in Germany though – floating the Deutschmark in 1973 had to some extent relieved German monetary aggregates from the distorting effects of periodic surges in currency inflow). Higher inflation might not have mattered too much except that the variability of inflation in each country also sharply increased after 1971 – almost tripling in the UK and US and doubling in Germany. If more unstable inflation is also less predictable inflation, micro-economic efficiency will have suffered as changes in relative prices became less predictable. A decline in real GNP growth did occur after 1971 but this cannot have been entirely due to microeconomic factors, rather lower pressure of aggregate demand relative to that experienced in the 1960s was the dominant factor. This was caused partly by and partly as a disinflationary reaction to the shocks suffered by the world economy in the 1970s.

It is entirely to be expected that the move to floating rates would correspond with the increased exchange rate variability of 1972–84 compared with 1960–71 (see tables 1.1 and 1.2); and, although

**Table 1.1** Growth and Instability 1960-71 and 1972-84

	<i>UK</i>		<i>US</i>		<i>Germany</i>	
	1960-71	1972-84	1960-71	1972-84	1960-71	1972-84
Average annual inflation (%) <sup>a</sup>	4.15	11.47	2.64	7.27	2.58	4.39
Variability of the annual price index <sup>b</sup>	0.15	0.43	0.11	0.30	0.09	0.17
Average annual % growth in real GNP <sup>c</sup>	2.86	1.30	4.10	2.50	4.10	2.00
Average annual growth in money % <sup>d</sup>	4.10	12.40	4.47	14.02	7.63	6.66
Variability of annual average money stock <sup>b</sup>	0.16	0.52	0.16	0.26	0.26	0.24
Variability of annual average exchange rate <sup>b,e</sup>	0.07	0.17	—	—	0.05	0.15
Variability of annual average reserves <sup>b,f</sup>	1.29	0.53	0.57	0.69	0.64	0.27
Variability of annual average interest rates <sup>b,g</sup>	0.21	0.23	0.32	0.34	0.40	0.40

*Source:* IMF, *International Financial Statistics*, Yearbook 1985.

*Notes:* <sup>a</sup> Consumer price index

<sup>b</sup> Coefficient of variation

<sup>c</sup> Measured in 1980 prices, exponential time trend

<sup>d</sup> M1, exponential time trend

<sup>e</sup> \$ per £ and DM per \$

<sup>f</sup> Total reserves excluding gold

<sup>g</sup> Treasury Bill rates in UK and US, call money rates in Germany

exchange rates continued to be managed, that the variability of foreign exchange reserves would decline relative to 1960-71 when countries were allowing very little variation in their exchange rates.

What is perhaps more surprising is that there was no great change in the variability of interest rates: a floating exchange rate regime is supposed to increase monetary independence and so allow countries to fine tune independent monetary policies. Interest rate variability

**Table 1.2** Mean Absolute Monthly Percentage Changes in Prices and Exchange Rates (June 1973 to February 1979)

	<i>Wholesale Price Index (WPI)</i>	<i>Cost of Living Index (COL)</i>	<i>Spot exchange rate against the dollar</i>	<i>COL/COL<sub>US</sub></i>
US	0.009	0.007	—	—
UK	0.014	0.012	0.020	0.007
France	0.011	0.008	0.020	0.004
Germany	0.004	0.004	0.024	0.004

*Source:* Frenkel and Musa (1980).

*Note:* Monthly data are used in this table as the annual data used in table 1.1 masks a lot of the within-year variability that is more clearly shown in the monthly data.

could, on these grounds, be expected to have increased. That this was not especially marked might, of course, have been due to a country maintaining similar policies on interest rates pre- and post-1971. But this is probably not the main reason for the similar interest rate variability experience of the two periods. (It might be noted that quarterly data, rather than the annual data upon which table 1.1 is based, shows a larger, 40 per cent, increase in interest rate instability in the US and the UK and an actual fall in Germany, but these changes are still not great when compared with the much larger changes in the variability of the consumer price index, money, exchange rates and foreign exchange reserves).

More fundamentally, it is now widely believed that the arguments that floating exchange rates must increase monetary independence were bogus. For example, the early proponents of floating exchange rates placed almost total emphasis on the current account in their view of the determination of the exchange rate. The dominant feature, however, of the international monetary system of the 1970s and 1980s has been the huge outstanding pool of international capital responsive to small interest differentials between financial centres. In their effects on the exchange rate, such capital movements swamp day-to-day current account transactions. As we shall see in later chapters, a high degree of capital mobility has fundamental implications for the determination of a floating exchange rate and for the insulation properties of such a rate.

The supposed monetary independence of floating exchange rates may be questioned from a different but related perspective. Thus, 'there is no such thing as independence so long as governments have

inflation, real wage and employment objectives' (Dornbusch, 1983). That is, so long as governments adopt explicit, or even implicit, exchange rate targets, changes in monetary conditions still get transmitted from one country to another and, given the fact that governments do pursue domestic macroeconomic targets, cannot be locked out (or locked in). This is especially true of the international monetary system as it now stands with one large economy – the USA – dominating the level of interest rates throughout the system. For example, monetary tightness in the first half of the 1980s led to dollar appreciation which induced European industrial countries, fearing inflationary effects, also to pursue monetary tightness. The earlier experience of the second half of the 1970s also supports this view of monetary policy dependence in the international economy. Expansionary monetary policy and lower interest rates in America led to dollar depreciation and enhanced American competitiveness; this was countered by expansionary monetary policy and lower interest rates in Europe so as to regain some of the competitive edge lost to America (de Grauwe, 1983).

The main difference between the 1960s and the later period is that in the 1960s synchronized changes in monetary conditions were achieved through changes in the foreign exchange reserve component of domestic money supply, as is explained by the monetary approach to the balance of payments, while since 1971, synchronization has been brought about by countries being induced to follow similar policies with regard to changes in the domestic component of local money supply.

However, the 'monetary-conditions-dependence' view should not be overstated. Countries do retain discretion over the choice of macroeconomic objectives and, therefore, over their explicit or implicit exchange rate targets. The election of a new government in the UK in 1979 is one such case. The new government raised the priority of reducing the rate of inflation and so adopted a policy of increased monetary tightness and accepted sharp exchange rate appreciation. The extent of sterling's appreciation might have been greater than the authorities had expected (or wanted), the exchange rate following a time path that accords well with the exchange rate 'overshooting' hypothesis – see chapter 6.

### **The Following Chapters**

Chapter 2 gives a brief insight into traditional exchange rate theory. According to the 'traditional' paradigm that exchange rate is deter-

mined by the supply and demand flow for foreign currency, and exchange rate stability requires the fulfilment of the Marshall-Lerner condition. The traditional covered interest parity theory of the forward exchange rate, similarly set in a flow-variables context, is also explained in chapter 2. Keynesian, or income-expenditure, theories which were developed in the two decades following the publication of *The General Theory* in 1936 are then briefly outlined and are seen as stepping stones towards the modern monetary and asset stock-adjustment theories of the balance of payments and exchange rate determination.

Before looking at these, however, we assess the problems of macroeconomic management in an open economy in chapter 3. After all, one of the main benefits of improving our understanding of the exchange rate mechanism is to enhance the efficacy of economic management. The plank upon which this chapter is based is the Mundell-Fleming model developed in the early 1960s and later transformed to account for modern theoretical developments in, for instance, the theory of rational expectations.

The traditional balance of payments theory considered in chapter 2 contrasts sharply with the Monetary Approach to the Balance of Payments (MABP) which is discussed in chapter 5. Proponents of the MABP argue that the balance of payments is a monetary phenomenon and should be analysed using familiar monetary tools; namely, the demand for and supply of money. One of the key features of the MABP is its implications for economic policy: for example, a devaluation can at best only have a transitory effect on the balance of payments and the effects of domestic credit expansion on the domestic economy will be purely transitory because of offsetting balance of payments movements. The econometric evidence on such policy conclusions is also presented in chapter 5, as is the evidence on the determination of the world inflation rate.

In chapter 4 the hypothesis that exchange rates are determined by relative national price levels – purchasing power parity (ppp) – is discussed and shown to be questionable on both theoretical and empirical grounds. One particular feature of the recent behaviour of prices *vis à vis* exchange rates is that the former have exhibited less variability than the latter, as table 1.2 shows. Thus short-run, monthly, movements in exchange rates seem to bear little relationship to national inflation rates.

How do we explain the above volatility of exchange rates? A number of researchers have argued that the exchange rate is more akin to prices of assets, such as bonds and stocks, than the prices of commodities such as those included in the WPI and COL indices in



table 1.2. Viewing the exchange rate as an asset price leads to statements such as: 'Exchange rates are determined in asset markets which are conceptually different to the markets for ordinary goods and thus require analysis using tools different to the standard kit of demand and supply analysis.' The tools of the asset approach to the exchange rate are considered in chapters 6, 7 and 8.

In chapter 6 the concept of the exchange rate as an asset price is discussed and three particular versions, which concentrate on the demand for and supply of money, are considered: namely, the flex-price monetary approach, the fix-price monetary approach and the currency substitution approach. These monetary models give insights into the issue of exchange rate volatility. The flex-price monetary model highlights the crucial role that expectations play in determining the exchange rate. Thus, if, for example, agents expect less monetary growth in the future this may move the current exchange rate by a greater amount than is justified by the current money supply. The sticky-price monetary model, due to Dornbusch (1976) gives a story of exchange rate volatility in terms of asymmetric adjustment speeds in goods and asset markets. The currency substitution model, which focuses on the desire by agents to hold a portfolio of currencies in a regime of floating exchange rates, shows that exchange rate volatility may reflect agents switching between different currencies. The policy implications of the monetary-asset models are also stressed in chapter 6.

The portfolio balance approach to the determination of the exchange rate is considered in chapter 7. This model falls within the asset class of models, but it differs from the monetary models considered in chapter 6 in that it includes a broader menu of assets in the determination of the exchange rate. The portfolio model can usefully be used to analyse policy changes, particularly of a fiscal nature, which are not amenable to discussion in the monetary model. The portfolio model can also be used to give answers as to why exchange rates may be volatile and also give an interesting adjustment mechanism for the exchange rate from short-run to long-run equilibrium.

Further implications of the exchange rate as an asset price are considered in chapter 8. In particular, the implications of the efficient markets hypothesis for the forward exchange rate are discussed and empirical evidence presented. Furthermore, it is shown that the bulk of exchange rate changes should be unanticipated and respond to new information about such factors as money supplies and income. Other explanations of exchange rate volatility which rely on an essentially 'non-rational' view of foreign exchange market participants are also given in chapter 8.